50X1-HUM

DA INTELLIGENCE REPORT
(Use this form only in accordance

CONFIDENTIAL

USSR

SUBJECT
Transmittal of Publications (C)

REFERENCES

DATE OF INFO.
Jul 57 50X1-HUM

REGRADING DATA CANNOT BE PREDETERMINED

SUMMARY

& report

1. Transmitted herewith is an English language which summarized the scientific and technical articles of interest contained in the following publications:

a. Fertigungstechnik
b. Giessereitechnik
c. Schweisstechnik

} Scientific & tech publications

50X1-HUM

NOTE: Reproduction of this ... part is prohibited, if SECRET or TOP SECRET, except with permission of the issuing office. All requests for authority to reproduce will be directed to the Assistant Chief of Staff, G-2, Department of the Army.

... National Defense of ... of the Espionage Act, 50 U.S.C. 31 and 32, as amended. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

DA FORM 1 OCT 53 1048

REPLACES OCS FORM 17A, 1 APR 53, WHICH MAY BE USED.
CAUTION — REMOVE PROTECTOR SHEET BEFORE TYPING.

50X1-HUM

50X1-HUM

CONFIDENTIAL

50X1-HUM

the principle, the applications, and the development trends of the electric slag welding process which belongs to the most important developments of the institute. 32 figures.
(SCHW 7. no.7. 252-259. July 1957. Kiew, USSR)

The application of some technological welding processes in USSR's heavy machine building industry

Prof.Dr.K.V.Ljubavskij.- The rapid progress of the machine building industry of the USSR was accompanied by a continuous improvement of technological processes including the welding methods. In addition to automatic and semi-automatic submerged-arc welding processes, a number of new welding methods have successfully been introduced to heavy machine building. One of these is the CO_2-shielded metal-arc welding process as developed at the CNIITMAS Institute (for welding technology). This process forms a valuable complement to the electric slag welding process as it is suitable for medium and small plate thicknesses. The method is fully described, and its advantages are demonstrated by a series of practical examples. 23 figures; 5 tables.
(SCHW 7. no.7. 263-270. July 1957. Moskov, USSR)

Making metallurgical rolls out of magnesium-treated cast iron

F.Reinshagen and W.Findeisen.- GDR's steelsworks and rolling mills have made considerable progress during the last years in regard to the strength properties of the steels produced. The rolling of alloy and high-silicium steels, however, requires higher wear resistance of the rolls, so that the introduction of Mg-treated cast iron became a necessity in chilled iron technology. The authors give an account of the experiences gathered at "VEB Walzengiesserei Coswig", GDR, in using spheroidal graphite cast iron for metallurgical rolls. The development of the respective equipment and techniques is also treated. 9 figures.
(GT 3. no.7. 145-151. July 1957. GDR)

High carbon coke (HCC) experiences in the GDR

G.Speer.- After outlining the properties and advantages of special high-carbon foundry coke (made under an US license agreement in West Germany), the author reports on results of GDR's cupola trials using the new fuel. Recommendations are given as to the categories of foundries in the GDR that are likely to profit from its application. 1 figure.
(GT 3. no.7. 151-152. July 1957. GDR)

Technological progress in Polish founding

Short Report.- During a convention at the Polish Foundry Institute (Krakow), reports were given on the introduction of the hot-wind cupola process, and also on the steps taken towards water cooling and melting in cupolas having a basic lining. Great efforts are made to extend the field of application of nodular graphite and alloyed cast iron, and also of magnesium casting alloys. Further progress has been made in the use of synthetic sand and of the cement-sand molding technique. Preparations are now under way at several foundries for the introduction of the shell-molding technique and the lost-wax process. During the next years, particular attention is to be paid to chill casting, centrifugal casting, and die-casting. The construction of mechanized foundries as well as the modernization of existing plants is also planned.
(GT 3. no.7. 165. July 1957. From: "Przeglad Odlewnictwa" 7 (1957), no.1, Poland)

Electrical blast furnace in Yugoslavia

Short Report.- The iron works at Store near Celje, Yugoslavia, is known by the high quality standard of its products. The works has been extended considerably during the last years. In August 1954 a 12,000 kVA electric blast furnace for a voltage of between 107 and 220 Volts was completed and put into operation. This furnace produces between 80 and 85 ton of pig every day. Electric power consumption ranges from 2,600 to 3,000 kwhr/ton pig. The standard analyses of the gray and white pig made in this furnace are indicated.
(GT 3. no.7. 165. July 1957. From "Livorski Vestnik" 5 (1957), no.1)

Problems of the automation of welding

Prof. B.O.Paton.- After initially outlining the status of mechanized and automatic welding methods in the USSR, the author gives an account of the proceedings at the B.O.Paton Institute for Electric Arc Welding, Kiew. The work at this institute is concentrated on the following subjects: (a) metallurgical and technological problems of arc welding, electric slag welding, and resistance welding; (b) problems of static and dynamic strength of welded joints and structures; and (c) development and manufacture of units and equipment for the electric welding processes. The author thoroughly treats

Low-alloy case hardening steel experiences

Dipl.-Ing.B.Voschenilek.- The general tendency to a more economical use of rare or expensive alloying elements such as Ni and Mo has affected the ranges of case hardening and heat-treatable steels preferrably used in the different countries. To secure sufficient case depth, different alloying additions are used depending on availability. The selection of grain-control agents is governed by similar considerations. Proper heat treatment is the key to satisfactory properties in low-alloy steels. Heat treatment must also be economical and cause only little or no warping of parts subjected. The author reports on studies conducted at the Research Institute for Materials and Technology, Prague, CSR, during the last three years in order to establish the properties of low-alloy case-hardening steels used in the CSR. 23 figures; 1 table.
(FT 7. no.7. 311-319. July 1957. Prague, CSR)

Progress in machine tools. Review of the 1957 Leipzig Technical Fair. Part II.

Ing.H.Ruggaber.- Illustrated survey of some interesting developments and/or designs in the following types of machine tools:
Grinding machines; gear cutting machines; electrical discharge machining units; h-f heating equipment; metal forming machines; and plastics working machines. Figures 12 through 22.
(FT 7. no.7. 320-324. July 1957. Leipzig, GDR)

Notes on the economical production of highlyx accurate bores

Dipl.-Ing.W.Radehaus.- The author initially outlines the difficulties involved in the production of accurate bores meeting the tolerance requirements of series manufacture. Reaming is a very time-consuming process, and fine boring requires increased working speeds and special machines. The tool question is decided in favour of double-cutting tools, i.e., tools protruding from the boring bar in two opposite directions and having a cutting edge on either end. Such tools reduce boring bar unbalance and deflection. The author then described several boring bar and tool designs that have proved useful in the control of self-excited vibrations.
20 figures.
(FT 7. no.7. 327-331. July 1957. Berlin, GDR)

The abrasion of a metallic surface as a function of the angle of attack of the abrasive particles

An abrasive particle fixed in a grinding disk or any other grinding tool attacks thesurface of the body to be ground mainly by impact action. This is also true for loose abrasive particles. Abrasion of a metallic surface depends on the mode in which the abrasive grain acts on the metal, i.e., on the stress distribution produced by the abrasive particles. This invokes the assumption that the abrasion of a metallic surface also depends on the angle at which the subjected surface is approached and hit by the abrasive particle. It is reported on tests made with a simple device and a number of different Al-Cu alloys. The evaluation shows that, other conditions being equal, the amount of metal removed from the surface of a plane metallic specimen by the impact of loose carborundum particles depends on the angle of attack and on the plasticity of the metallic specimen.
6 figures.
(FT 7. no.7. 336-337. July 1957. From: J.Techn. Physics., USSR, vol. 25 (1955), no.13)

Digest of GDR's Technical and Scientifical Periodicals

PRODUCTION ENGINEERING, FOUNDRY, AND WELDING

This Digest covers the following periodicals:

Fertigungstechnik (FT)
Giessereitechnik (GT)
Schweisstechnik (SCHW)